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Efficiency and Profitability Trends in Selected Professional and Transportation Services

Final Report

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Data Page

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Abstract

Six professional service industries and five transportation service industries were analyzed for productivity growth, value added growth, profitability and rivalry over the period 1994-2001. It was found that storage and warehousing and software consultancy and supply had the highest productivity growth rates over the reporting period, while sea and coastal water transport and business and management consultancy activities had negative productivity growth rates. The negative growth in productivity needs to be addressed, especially for water transportation services that affect most Jordanian export industries.

It was also found that, for most of the eleven industries, increasing competition, as represented by the number of registered firms, resulted in reduced profitability. This leads to price and/or quality competition, both of which are to the ultimate benefit of the consumer. Moreover, value added per employee increased for seven of the eleven services studied. This is necessary in order to increase competitiveness of these services in the long run.

Finally, the report also addresses ongoing efforts to improve the efficiency of these services and specific measures that different public institutions are encouraged to take.

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1. Executive Summary

Eleven service industries, constituting nine percent of total GDP in 2001, were analyzed for productivity growth, value added growth, profitability and rivalry over the period 1994-2001. These services include six professional service industries and five transport-related services.

Increased productivity, or gross output per employee, signals increasing efficiency of the service being provided. It was found that storage and warehousing and software consultancy and supply had the highest productivity growth rates over the reporting period, while sea and coastal water transport and business and management consultancy activities had negative productivity growth rates.

Output and employment were examined to see the efficiency, or lack of, in recruitment. The ratio of operational surplus to gross output and the number of enterprises was also studied to see the effect of increasing (or decreasing) competition on profitability. It was found that, for most of these services, increasing competition resulted in reduced profitability.

The report also addresses ongoing efforts to improve the efficiency of these services. It concludes with specific measures that different public institutions are encouraged to take.

2. Purpose of the Study

The purpose of this study is to assess the opportunities and challenges facing selected Jordanian professional and transportation services with a view to increase exports of professional services and efficiency of transportation services.

3. Methodology

Data on exports and imports of services are virtually non-existent[1]. Data on gross output, employment, value added and profitability however, are available for several types of Jordanian services. These data were therefore used to shed more light on these services.

Eleven service industries, constituting nine percent of total GDP in 2001, were analyzed for productivity and value added growth over the period 1994-2001 in order to assess the opportunities and challenges they face[2]. Since gross output is a measure of the perceived value of these services, an increase in productivity, or gross output per employee, signals increasing efficiency of the service being provided; this is necessary but not sufficient to improve competitiveness in the long run.

Output and employment were examined to see the efficiency, or lack of, in recruitment. The ratio of operational surplus to gross output and the number of enterprises was also studied to see the effect of increasing (or decreasing) competition on profitability.

Some of the strengths and weaknesses were also identified for these sectors, which include six professional service industries and five transport-related services. These were based on recent studies and interviews.

Assumptions

The professional services selected have export potential in the regional and international markets. Transportation services do not have export potential, and in fact are fully or partly restricted under Jordan's commitments under the General Agreement on Trade in Services (GATS) of the World Trade Organization (WTO)[3].

Since Jordanian exports are dominated by products that are low/medium value-per-weight, transportation costs are a major component of total cost. Therefore, increasing the productivity of transportation services would have positive spillover effects on the competitiveness of Jordanian exports of goods and is therefore of utmost importance and urgency.

[1] This problem was raised by several consultants in Jordan and in most countries, given that the services industry is new. The Department of Statistics needs to increase its resources devoted to compiling statistics on trade in services.
[2] The specific results are detailed in the Appendix, Table A1. Data for 2002 are not available. The Department of Statistics is still working on estimates.
[3] For example, Jordan has made no commitments to increase foreign provision of road and rail transport under the GATS schedule.

4. Are Output and Employment Positively Correlated?

In an efficient industry, one would expect that output be highly positively correlated with labor, particularly so in labor-intensive industries, and that recruitment decisions would be made in accordance with expected output. The correlation between employment and output was therefore analyzed for these service industries for the eight years studied in order to shed light on the efficiency, or lack of, in recruitment.

The results are detailed in Table A2 in the Appendix to this report. Most services have a correlation coefficient higher than 0.8, suggesting efficiency in recruitment. Sea and coastal water transport, however, had a negative correlation coefficient (-0.35), which indicates recruitment decisions that do not reflect anticipated output patterns.

It is therefore important to identify the particular reasons why employment and output were not strongly correlated for this industry and others with a low correlation coefficient.

5. Is Profitability Positively Correlated with the Number of Enterprises?

Economic theory dictates that increasing competition and rivalry among firms in any sector is likely to reduce economic profitability and ultimately benefit the consumer[4]. Correlation between the operational surplus and gross output ratio (our measure of profitability) and the number of enterprises was therefore calculated to assess the impact of increasing or decreasing competition on profitability.

A priori, theory predicts a strong negative correlation. Departures from this rule may suggest price fixing, cooperative arrangements or other anomalies.

The results are detailed in Table A3 in the Appendix to this report. As expected, seven of the eleven services studied depict negative correlation coefficients (*viz.*, medical and dental, architectural and engineering, legal, accounting, software consultancy, sea and water transport, and storage), two were not able to be calculated due to data inconsistencies, and two show a positive correlation (land freight transport and business and management consultancy). For land freight, the positive correlation is likely due to tariff fixing by the government during the period under review and the small number of enterprises in the sector, which may allow for collusion. For business and management consultancy services, the correlation is probably coincidental; more details are provided on this result in the subsequent analysis.

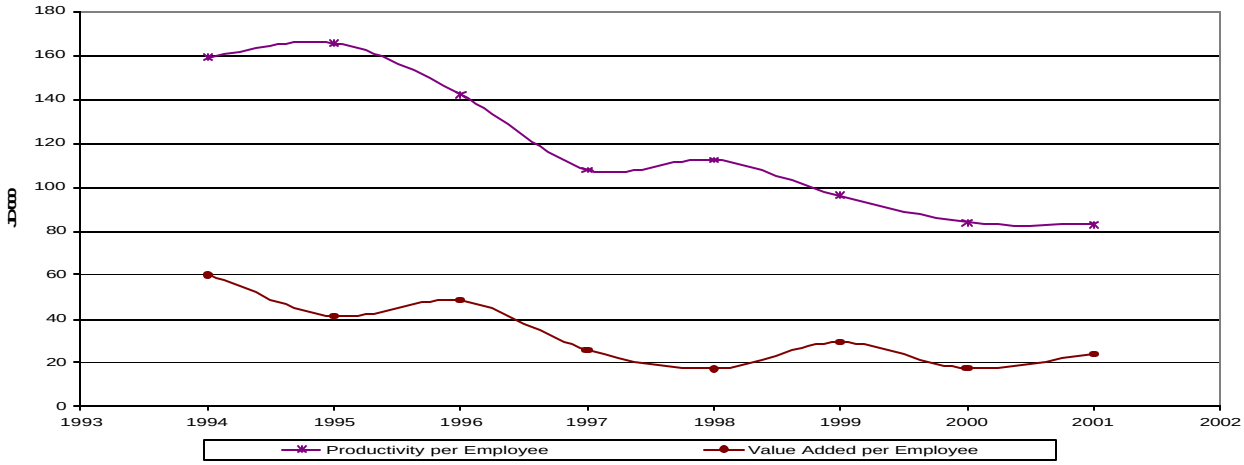
The productivity trend and value added per employee trend of all industries are detailed in the subsequent section. Note that the value added per employee trails closely to productivity for most of these services, which suggests that the value added contribution in output was more or less stable for these industries.

[4] In the long run, increasing competition results in "zero" economic profit (which is different from accounting profit in that it allows for a "normal" profit margin). This is particularly true in industries with low barriers to entry.

6. Sector Analysis

6.1 Sea and Coastal Water Transport

Figure 1- Productivity Trends: Sea and Coastal Water Transport



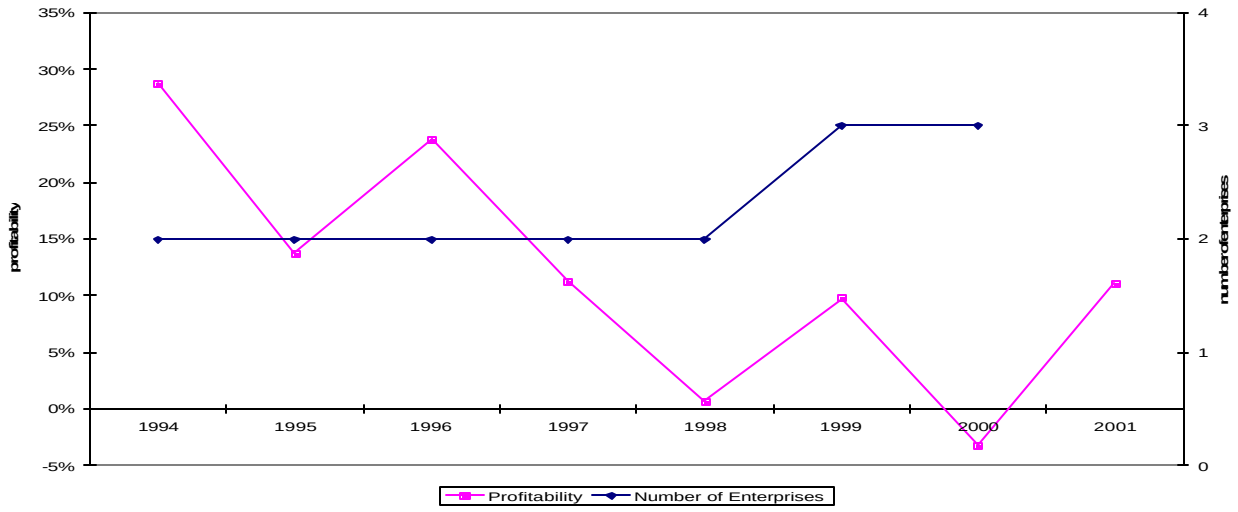
The productivity and value added per employee decreased by about 50 percent over the years 1994-2001. This trend was likely due to an increase in employment (by 38 percent) and a decrease in gross output (by 28 percent). The decrease in gross output indicates *lower demand for Aqaba maritime services for the period analyzed*, while the increase in employment suggests *mismatched recruitment levels*[5]. The negative gross output trend may be reversed with increased exports to Iraq; for this to happen, however, improvement of the infrastructure and superstructure of the Container Terminal at Aqaba Port is a necessity (Farhat, 2003). Specific measures that need to be taken in this regard include:

1- Purchase of additional gantry cranes to increase lifting capacity.
2- Initiation of construction work to improve infrastructure.

Moreover, if Aqaba is to improve long-term competitiveness, the huge decrease in productivity needs to be addressed especially with likely increased competition from other ports in neighboring countries- including Tartous, Latakya, Haifa, Dubai and Kuwait City. One of the main reasons behind this decrease in productivity is the excessive increase in employment that is not in line with the decrease in gross output over the same period, as described above. The reduction of unnecessary staff at the Port is therefore of utmost importance[6].

[5] As described in section 4, the correlation coefficient was *negative* for sea and coastal water transport services (-0.35 which likely indicates inefficient recruitment.
[6] Farhat recommends the design and implementation of a retraining and placement program.

Figure 2- Profitability: Sea and Coastal Water Transport



Profitability, as measured by the ratio of operational surplus to gross output, more than halved between 1994 and 2001. Privatization of the Aqaba port would likely increase competition and decrease profitability even further.

In a recent meeting, the Secretary General of the Ministry of Transport (MoT), Mr. Batayneh, elaborated that the Suez Canal fees are a main obstacle limiting the growth of Jordanian exports. These fees increase costs by $4 to $5 a ton, which translates into the application of around 40 percent to 50 percent of Aqaba Port's shipping fees to Jordan's low value-per-weight exports, e.g. phosphates, potash, etc.

Mr. Batayneh reported that MoT is currently trying to:

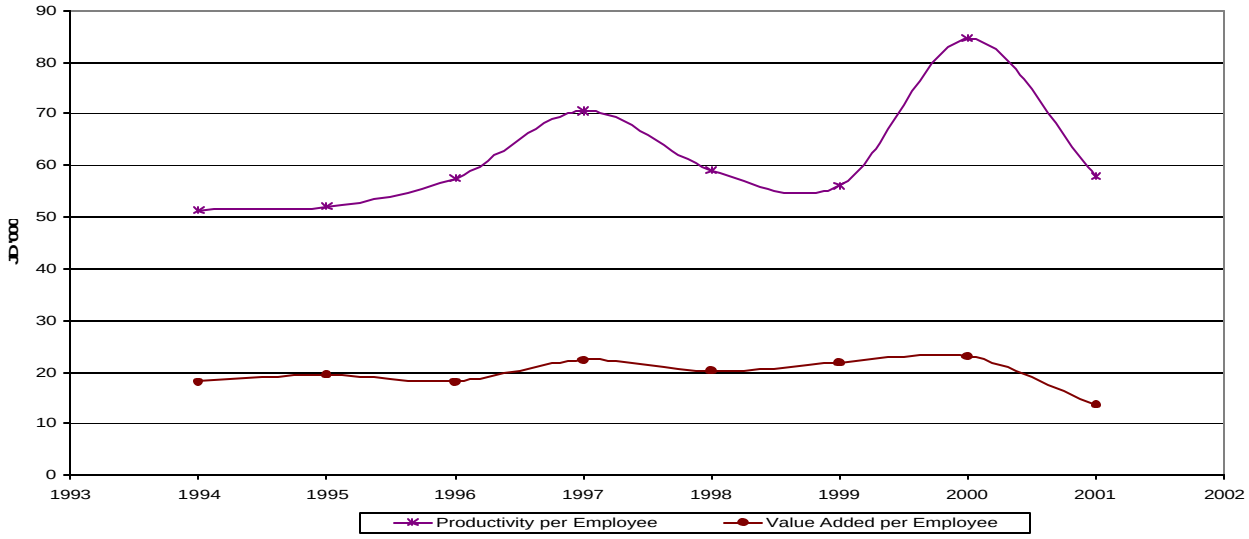
1- Negotiate with the Egyptian Government a special exemption from Suez Canal fees for exports of certain commodities (phosphates and other main exports).
2- Circumvent Suez by negotiating with Syria and Lebanon for use of their ports for exports to Europe, and Aqaba for Syria and Lebanon's exports to the Far East.

If the second measure materializes, we may see increased utilization of the Aqaba port by Syrian and Lebanese exports wishing to avoid Suez Canal and therefore the associated taxes in their exports to the Far East[7].

[7] The extent of utilization depends on the volume of these exports destined to the Far East; the higher the volume of exports, the larger the benefit for Aqaba Port.

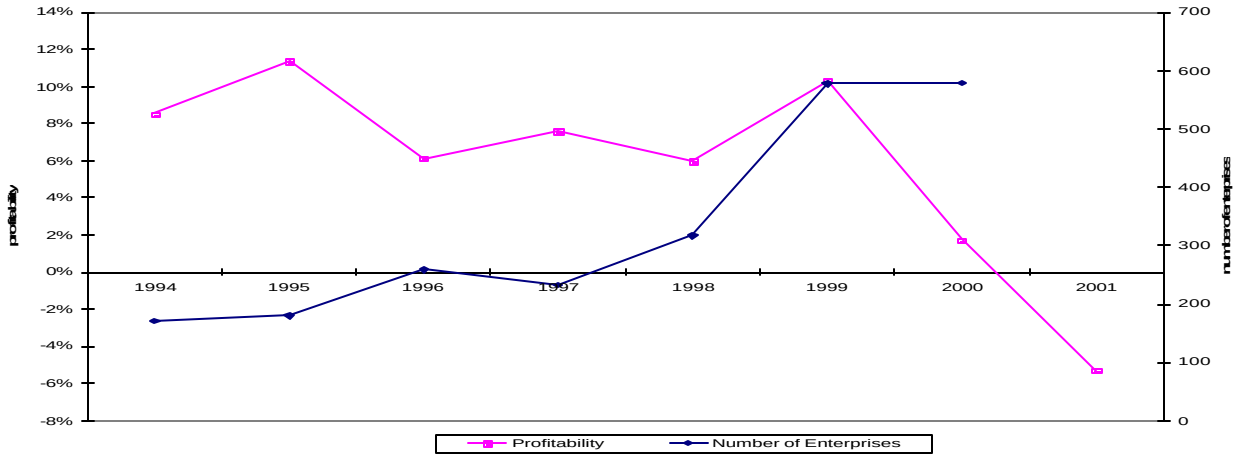
6.2 Scheduled and non-Scheduled Air Transport

Figure 3- Productivity: Scheduled and Non-Scheduled Air Transport



- Productivity decreased moderately (employment decreased more than gross output). The decrease in employment, from over 5,500 in 1994 to 3,828 in 2001, is mostly attributed to the restructuring of Royal Jordanian Airlines (RJ).
- Results indicate that the profitability of air transport services decreased from nine percent in 1994 to a negative five percent in 2001.

Figure 4- Profitability: Scheduled and Non-scheduled Air Transportation



Demand for air transport services (passengers and goods) plummeted after the September 11 events. This, coupled with the regional instability with the first year of the Intifadeh, partially explains the reduction in gross output and profitability of air transport services in 2001.

Previous research undergone by the researcher and by the Competitiveness Unit of the Ministry of Planning[8] identified an outbound logistics bottleneck in the RJ Airline fleet of cargo planes exporting medication, fresh-cut flowers, and other perishable goods; there are three RJ planes that currently serve the private sector, two of these are old and need replacement[9]. The shortage of RJ planes causes a delay in delivery and precludes new export opportunities, according to several private sector sources. Other airlines (such as Air France) have stepped in to transport goods.

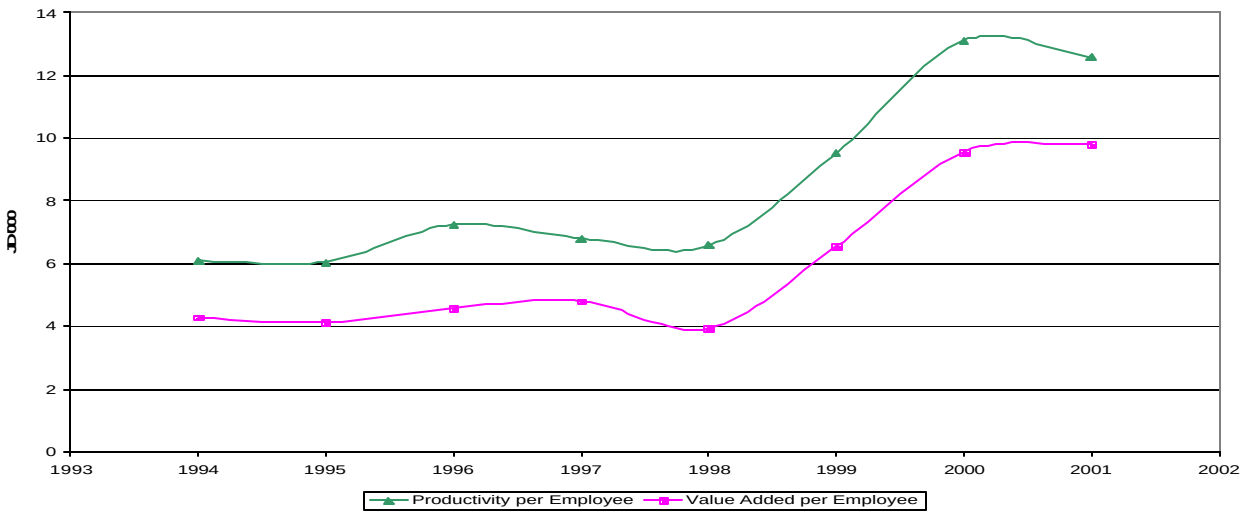
The Secretary General of MoT said that Aqaba is now an 'open sky' area, which indicates that RJ has no monopoly on routes where it does not fly (any foreign or domestic planes can fly in or out). This would increase competition, and hopefully increase the efficiency of this sector in the long run.

[8] Our results were based on interviews with the Jordan Exporters of Fruits and Vegetables Association and with the Jordan Shipping Company. The Competitiveness Unit of the Ministry of Planning documented the same results in the Agricultural Cluster paper.

[9] The third plane was added May 18, 2003, mostly to serve exports to the Untied States.

6.3 Storage and Warehousing

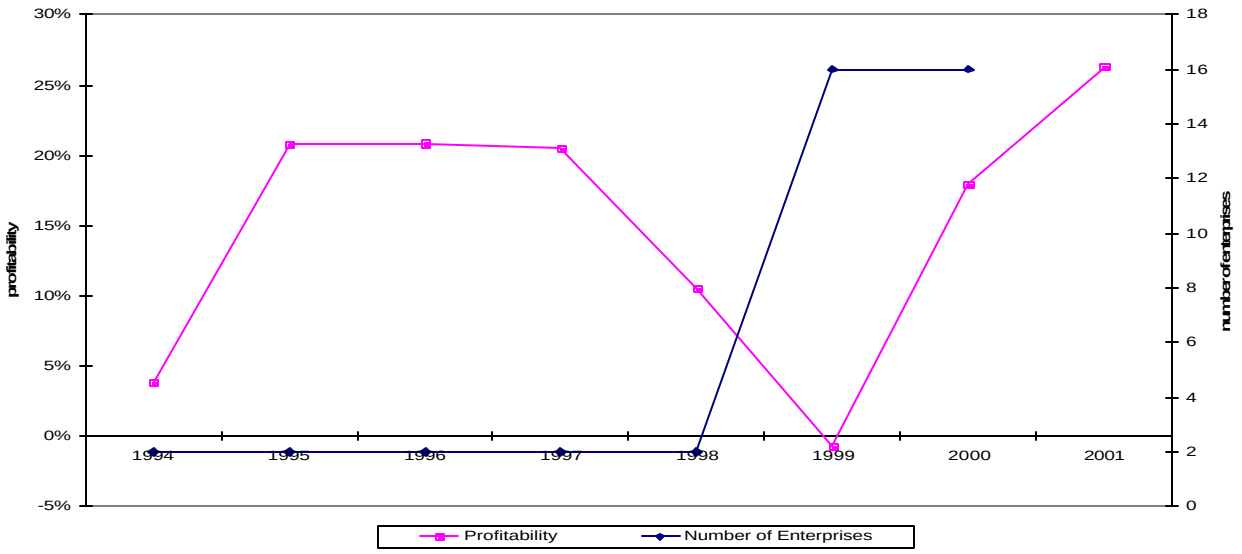
Figure 5- Profitability: Storage and Warehousing



- Storage and warehousing productivity and value-added per employee witnessed the largest growth of all services studied, mostly after 1998 (between 1998 and 2001, these indices doubled). This increase was largely due to the doubling of gross output over the same period; from about JD 6 thousand to JD 12.5 thousand.
- The number of enterprises in this sector increased significantly; there were two facilities in 1994-1998 and 16 in 1999.

The large increase in storage and warehousing firms in 2000 had a temporary negative effect on profitability, which was in the range of three to 21 percent in 1994-1998 and decreased to negative one percent in 1999. Nevertheless, it had a positive effect on gross output and therefore productivity.

Figure 6- Profitability- Storage and Warehousing



Some private sector sources have complained that storage facilities in Aqaba are insufficient and need repairs[10]. On this issue, the MoT is reportedly currently expanding the storage area at the port and reorganizing the traffic flow between these facilities in order to increase the efficiency and productivity of these services[11]. Moreover, the MoT is encouraging the private sector to invest in a land port in the outskirts of Amman to reduce the load off storage facilities in Aqaba and the Queen Alia Airport. This port would pool small shipments together and thereby reduce warehousing and packaging costs for small companies. It would also shift the Customs Department administration out of Amman[12].

[10] For details, see interview notes on Petra Navigation and International Trading in Kist (2002).
[11] Ad Dustour, July 7, 2003. "Liberalization of Tariffs and Increasing Truck Weights Improves Transportation Sector."
[12] Based on interview with the Secretary General, Ministry of Transportation.

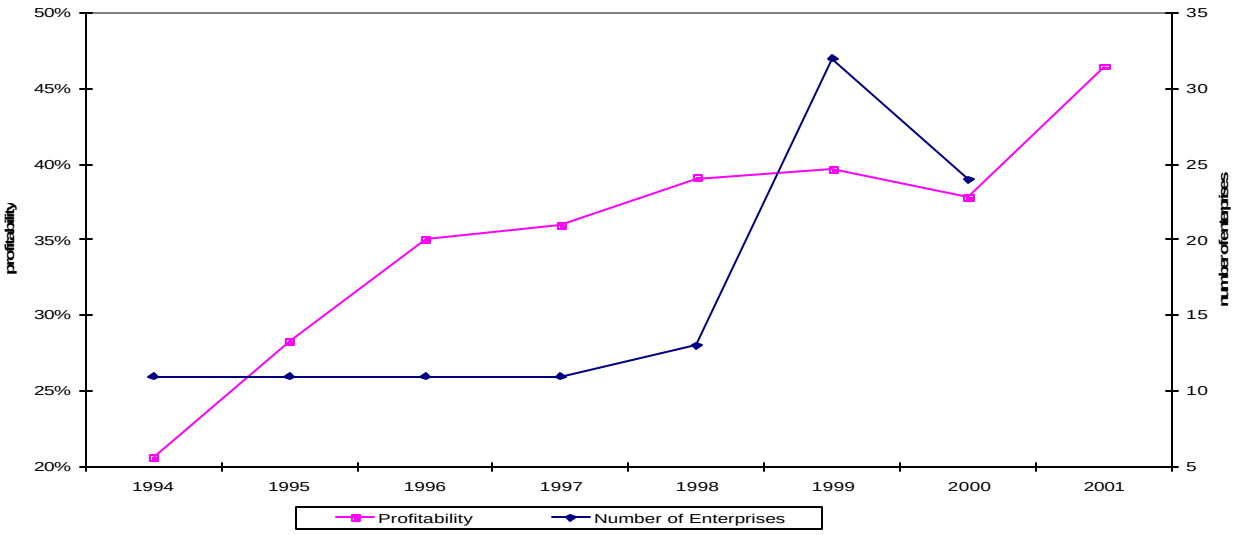
6.4 Land Freight Transport

Of all transportation services, land freight is probably the most important since has its spillover effects on all other industries and even on sea and maritime services.

Figure 7- Productivity: Freight Transport by Road

- The productivity of land freight transport by road remained relatively stationary over the period, increasing slightly in 2000 and 2001 to around JD 7,620 per year.
- The number of registered firms more than doubled between 1994 and 2000.
- Profitability continuously rose during the reporting period.

Figure 8- Profitability: Freight Transport by Road



As suggested before, price (tariff) fixing by the government for all destinations during the period 1994-2001 and the small number of enterprises, which allows for collusion, probably increased both the number of enterprises and profitability.

MoT's liberalization reforms in the area of land freight transport were implemented in two steps:

1- The elimination of the fixed freight tariff rates to regional cities in December 2001 (with the exception of those in Iraq and the Kingdom).
2- The elimination of fixed tariff rates to destinations in Iraq in June 2003 in the aftermath of the war.

These liberalization efforts are expected to make the sub-sector more efficient, though employment will be likely adversely affected. For example, of all eleven sectors, this sub-sector has the highest employment level at more than 29,000 in 2001 (for details, see Appendix, Figure A2).

The Secretary General of the MoT described that the current tariff from Aqaba to Amman is JD 10.6 per metric ton; according to a recent interview with a trucking company reported in Kist (November 2002), this tariff is not competitive with prevailing tariffs from Syrian ports to Amman. Consequently, valuable business is lost in Aqaba due to the inefficiency of land freight.

To illustrate the inefficiency of the pricing of trucking is, note the following:

Aqaba- Amman		Equivalent Trip (distance) in the U.S.[13]	
Rate/Ton	JD 10.6	Rate	$200+ $1/mile
Tonnage per truck	25 tons	Tonnage per truck	25 tons
Actual Cost (in JDs)	JD 265	Distance	320 km= 200 miles
Actual Cost	*USD 371*	*Actual Cost*	*USD 400*

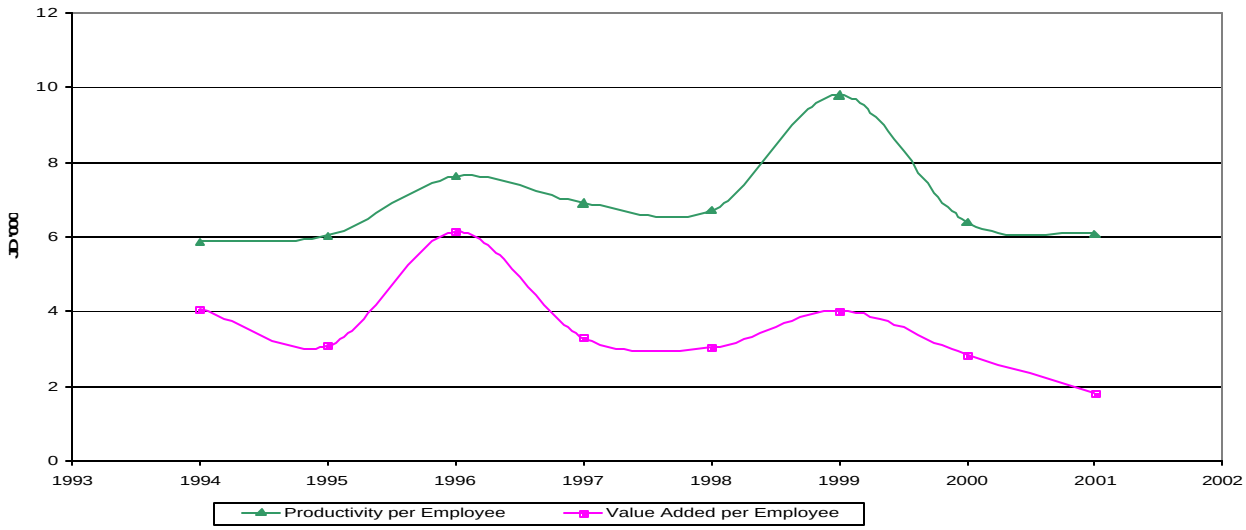
Even though compensation for truck drivers in the United States is much higher than in Jordan, the cost of transporting the same shipment over the same distance is not much higher than in Jordan. This demonstrates the inefficiency of this sector[14]. Since demand for land freight services is inelastic[15], the price-fixing has resulted in an increase in profitability even with the more than doubling of the number of enterprises.

Judging by previous history of liberalization of tariffs, trucking has become more efficient due to the liberalization of tariffs (to Syria, Iraq, and other destinations). Leaving the current tariff rate within the Kingdom (artificially) high is therefore a disincentive to use Aqaba (since the relative price of transporting goods to Syria or Lebanon is lower). Therefore, the success of Aqaba port depends on the liberalization and increased efficiency of land freight; the more competitive land freight costs, the more feasible it is to use Aqaba.

[13] The U.S. estimate for transportation was provided by Mr. Bernard Markowicz, Managing Director of Decision/Analysis Partners.
[14] A previous study indicates that the trucking costs in Israel are almost half those in Jordan.
[15] Trucking is the only "inexpensive" way to transport (non-phosphate) exports by land.

6.5 Railway Transport

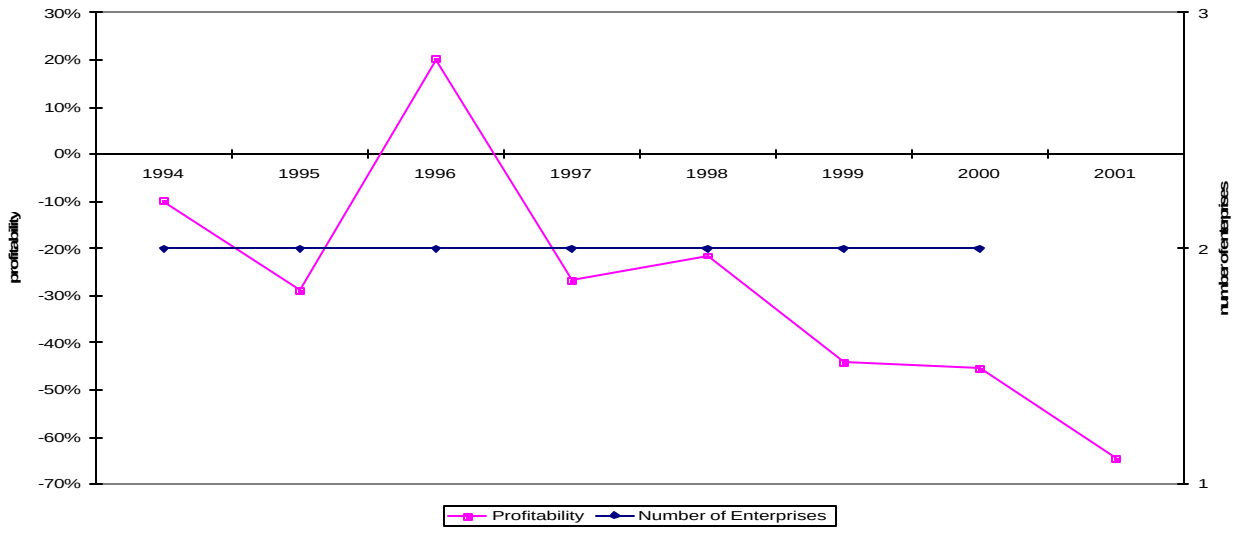
Figure 9- Productivity: Transport Via Railways



- The productivity of railway transport remained stationary at around JD 6,000 per year.
- Value added per employee almost halved. This is an alarming trend.
  - Employment in this sector decreased from 1,317 (1994) to 721 (2001)
  - Gross output decreased from JD 7.7 million (1994) to JD 4.4 million (2001)
- Profitability decreased from -10 percent in 1994 to -65 percent in 2001.

Profitability was negative for most of the years studied. This situation is obviously not sustainable in the long run. Government had to intervene in 1998 by subsidizing this sector by more than half a million JDs, but the situation did not improve.

Figure 10- Transport via Railways



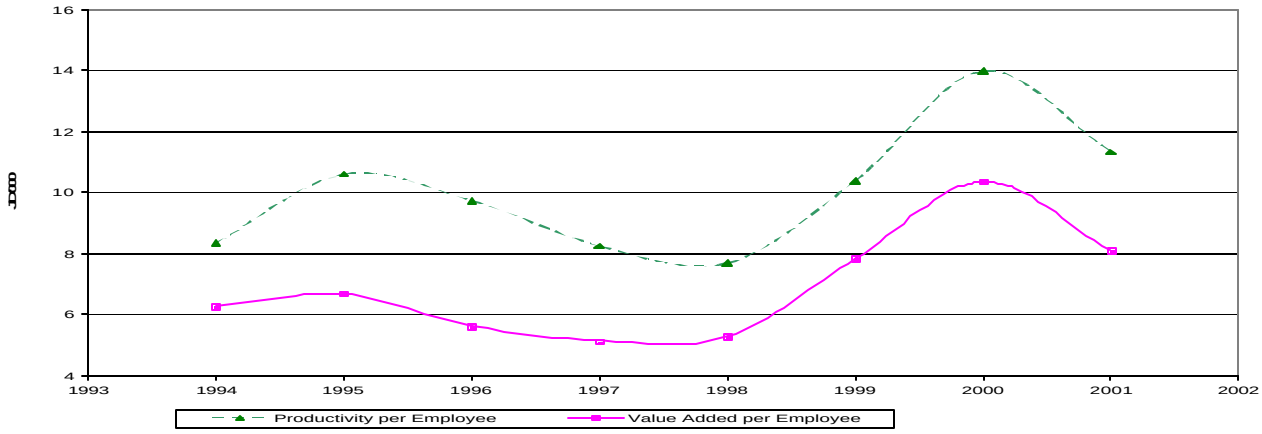
The Ma'an to Aqaba railway is not yet privatized, and now carries only phosphates. Currently, trains run on a narrow gauge and not a standard gauge. The latter is crucial to develop this sub-sector and allow for regional integration.

According to a recent report on services (Arkell, 2003), "the monopolistic Aqaba Railway Corporation is loss making, and unable to meet its operational, service, and financial requirements. There are no performance targets set. The Aqaba line is dedicated to transporting phosphates from the mines to Aqaba port for the Jordan Phosphate Mining Company. One train of 33 wagons, carrying 43 tons, makes the round-trip in 17 hours, including loading and unloading."

Railroad transportation is currently unbound in the GATS schedule. *It is essential to accelerate the privatization of this sub-sector so that traders have a viable substitute to freight transport by roads*. Otherwise, the negative profits will continue to undermine this sector.

6.6 Software Consultancy and Supply

Figure 11- Productivity: Software Consultancy and Supply

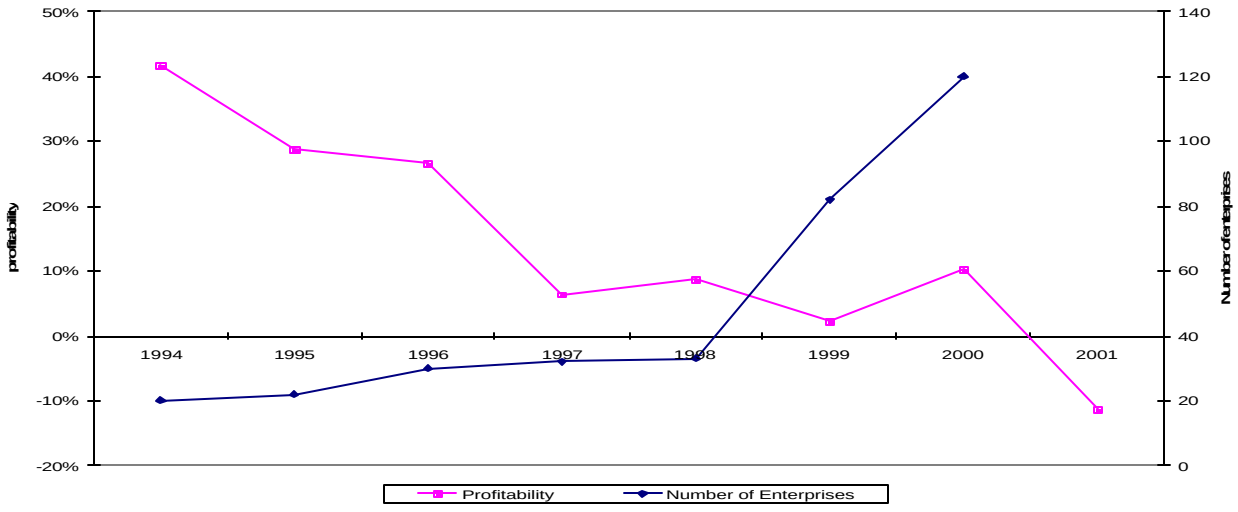


Software consultancy is a nascent sector: employment grew from 137 to 890 over the period analyzed, or by an average of 31 percent a year. This phenomenal growth is mostly due to increased investment in the late nineties by foreign investors from the Arab and Western world. These investments were attracted to Jordan due to the following strengths:

1- Jordanian companies have an edge in Arabization capabilities and their ability to provide culturally acceptable software to the Middle East.
2- Jordan boasts an educated youth that is proficient in the English language.
3- Jordan has a high number of Microsoft Certified Professionals and Oracle Certified Developers[16].

As the number of firms increased from 20 in 1994 to 120 in 2000, profitability decreased from 42 percent to 10 percent for the same years. This trend suggests a healthy competitive environment in this sector.

Figure 12- Profitability: Software Consultancy and Supply



[16] "Promoting ICT Investments in Jordan." Economic Consultative Council Report, October 24, 2001.

The huge increase in number of enterprises was caused by increased (foreign direct investment) FDI and domestic direct investment (DDI) and resulted in a huge increase in gross output (from JD 1.1 million to JD 10.1 million over the eight years analyzed, or more than 37 percent a year).

The software consultancy sector is relatively fragmented --there are only 12 firms in this sector with over 100 employees (Arkell, 2003). Software consultancy fared well over the last few years, as evidenced by a general upward trend in productivity and value-added, even with the 'dot-com' crash in the late nineties. Software consultancy is one of the most liberalized sub-sectors (see Table A3 in Appendix). While software consultancy has strong potential in the Arab world, it is less competitive elsewhere due to immense competition from India and Israel.

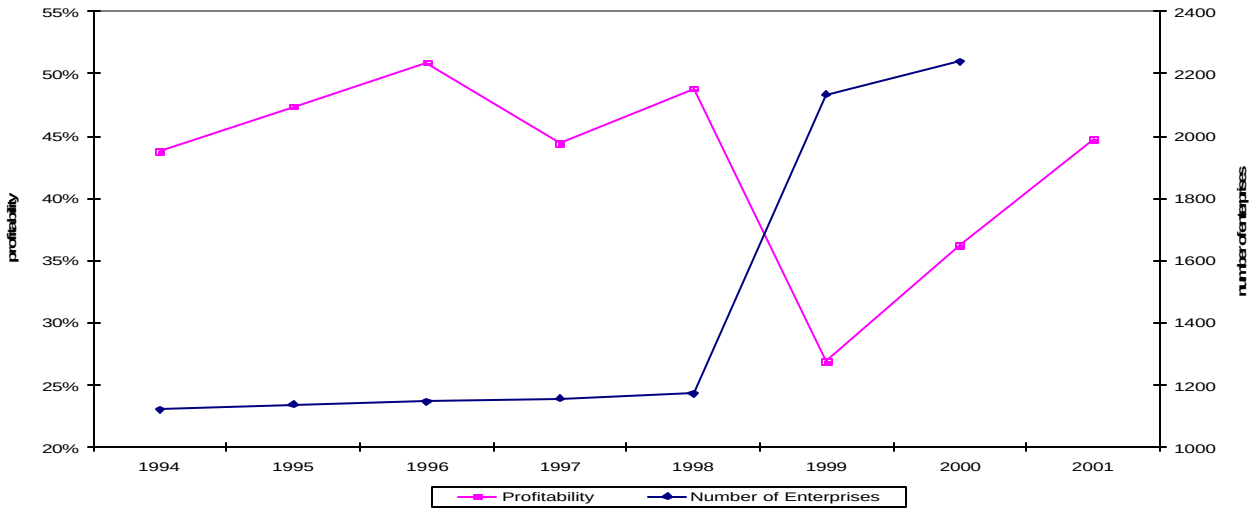
6.7 Legal Activities

Figure 13- Legal Activities

Legal activities saw very little change in productivity or value added per employee, though both gross output and employment more than doubled over the years 1994-2001.

Profitability was remarkably high at around 45 percent over the whole period. Profitability took a one-time hit in 1999, when it fell to 27 percent, which coincided with the doubling of the number of enterprises (from 1173 in 1998 to 2136 in 1999). Profitability reverted quickly to 45 percent in 2001.

Figure 14- Profitability: Legal Activities



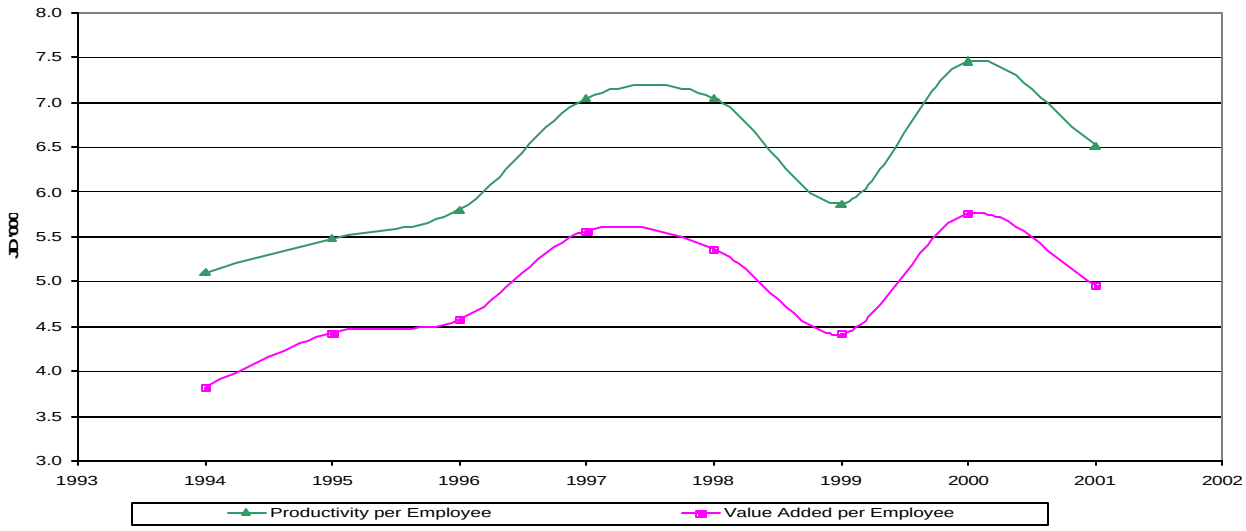
The Jordanian Bar Association is considered one of the largest and most organized sectors of the professional services. There is strong demand for Jordanian lawyers in the Arab world. Increased trade in legal services with Europe and the United States, however, will involve mutual recognition of certificates. This will probably lead to a request by the developed world to increase

liberalization of this sector. Currently, foreign lawyers face restrictions on supply of legal services in local law (under the GATS commitments for Jordan, mode 4 is unbound).

The huge regional developments in IT over the last few years are expected to create a powerful enabler for the provision of legal services over the internet (mode 1). This mode is fully liberalized under the GATS schedule for Jordan.

6.8 Accountancy and Auditing Activities

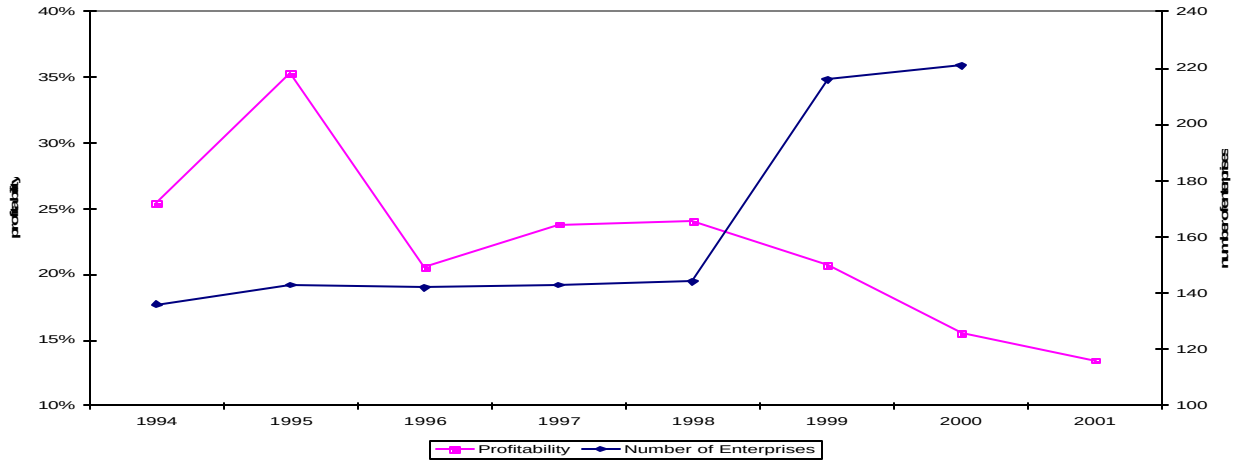
Figure 15- Productivity: Accounting, Book-Keeping, Auditing and Tax Consultancy Activities



Accountancy and auditing activities experienced a small increase in productivity and value-added as employment and output grew.

Profitability halved over the reporting period. This coincided with the increase in number of firms, from 136 to 221, over the same period and further validates the theory that increasing rivalry results in lower profits and ultimately benefits the consumer.

Figure 16- Profitability: Accounting, book-keeping, Auditing and Tax Consultancy



Local standards and laws vary between countries, thereby limiting exports of these services. Nevertheless, membership in the Jordanian Association of Certified Public Accountants has risen significantly (Deloitte and Touche, 2001). CPA certification for Jordanian professionals is crucial to increase accountancy and auditing activities exports (particularly for mode 4 exports).

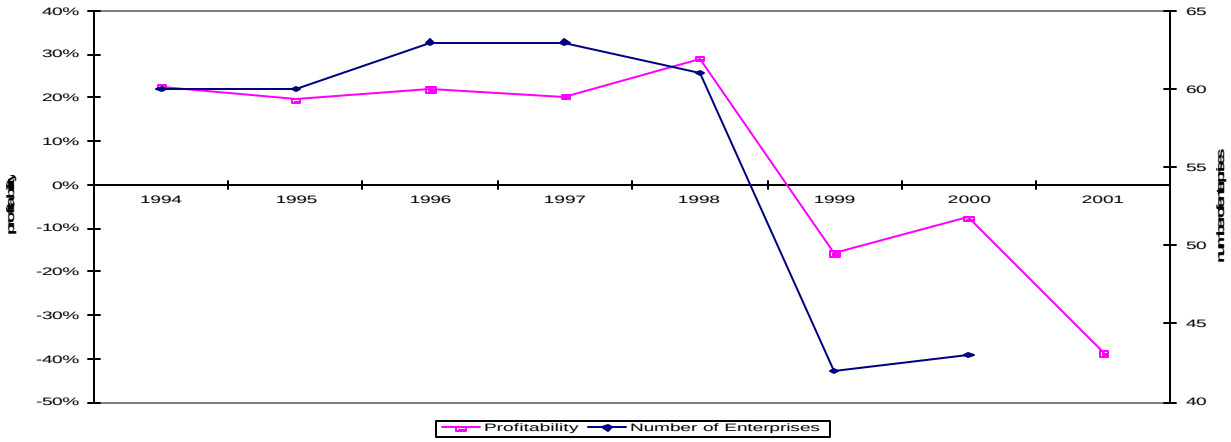
6.9 Business and Management Consultancy

Figure 17- Productivity: Business and Management Consultancy Activities

Business and management consultancy services is a very small industry- employment was less than 400, while gross output was less than JD 3 million in 2001. Productivity peaked in 1997 and started to decline since then due to employment growth that exceeded the growth in gross output.

The number of firms working in this sector decreased from 60 to 43 over the period 1994-2000. Profitability decreased from 23 percent to -8 percent.

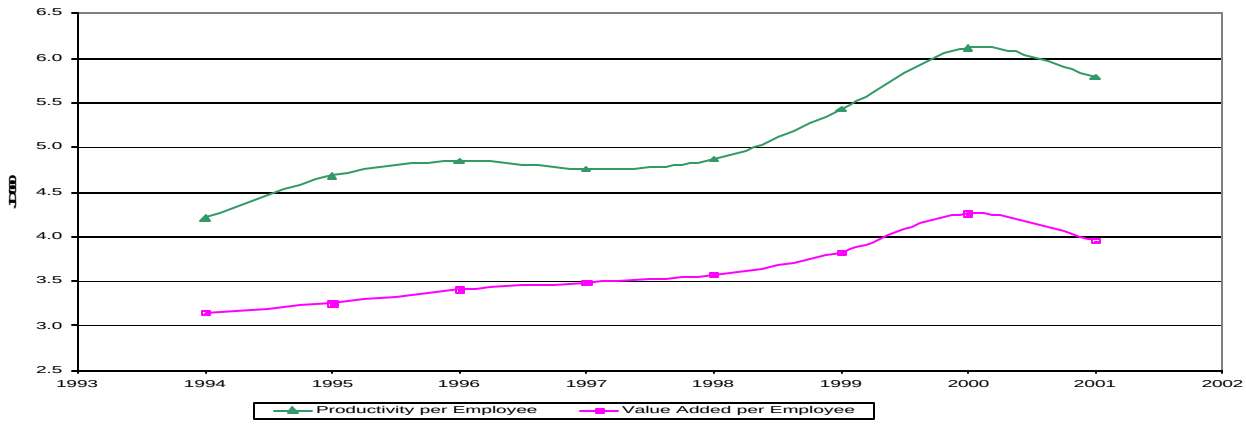
Figure 18: Profitability- Business and Management Consultancy Activities



Increasingly, both private and public sector institutions in neighboring oil-rich countries have resorted to business process outsourcing. In an era of downsizing and increased competition, institutions are striving to become "leaner and meaner." More and more regional firms are resorting to outsource some of their business processes in order to focus on their core competencies, or areas where they can excel the best. This is expected to open up new opportunities for the business and management consultancy sector in Jordan, particularly over the internet (mode 1).

6.10 Architectural and Engineering Activities

Figure 19- Productivity: Architectural and Engineering Activities and Related Technical Consultancy

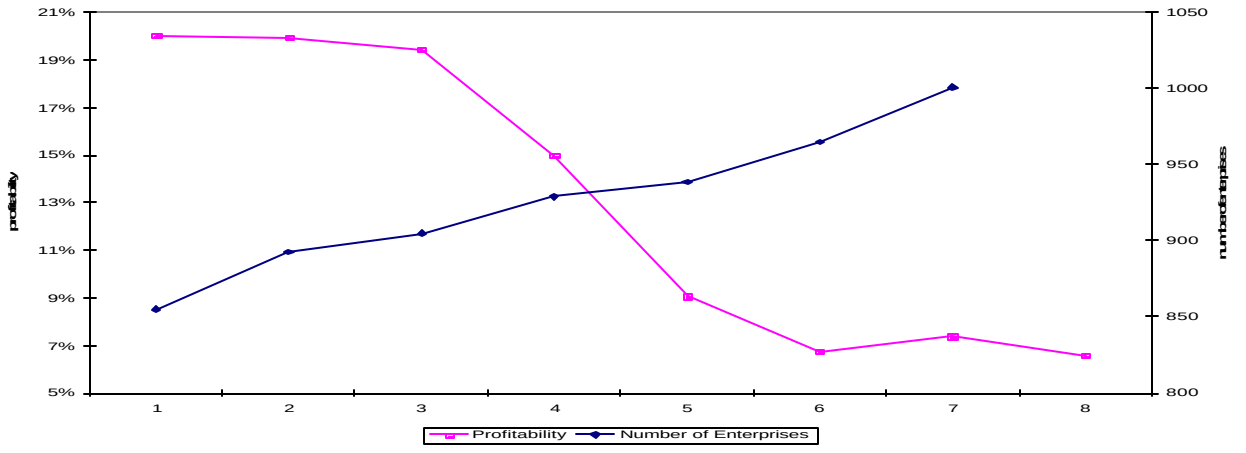


The productivity and value added of architectural and engineering activities exhibited steady growth over the years. This sector employed 5,021 employees in 2001 and is therefore the second largest employer of the professional services analyzed (after medical and dental services).

- Profitability fell from 20 percent in 1994 to 7 percent in 2000.
- The number of businesses grew modestly (855 in 1994, 1001 in 2000).

The law on engineers and architects specifies that they must be qualified and registered. There are about 20 practices with 15-20 employees, and five or six with 100 to 200 employees. The rest of these practices are small and are not export-oriented[17].

Figure 20- Profitability: Architectural and Engineering Activities and Related Technical Consultancy

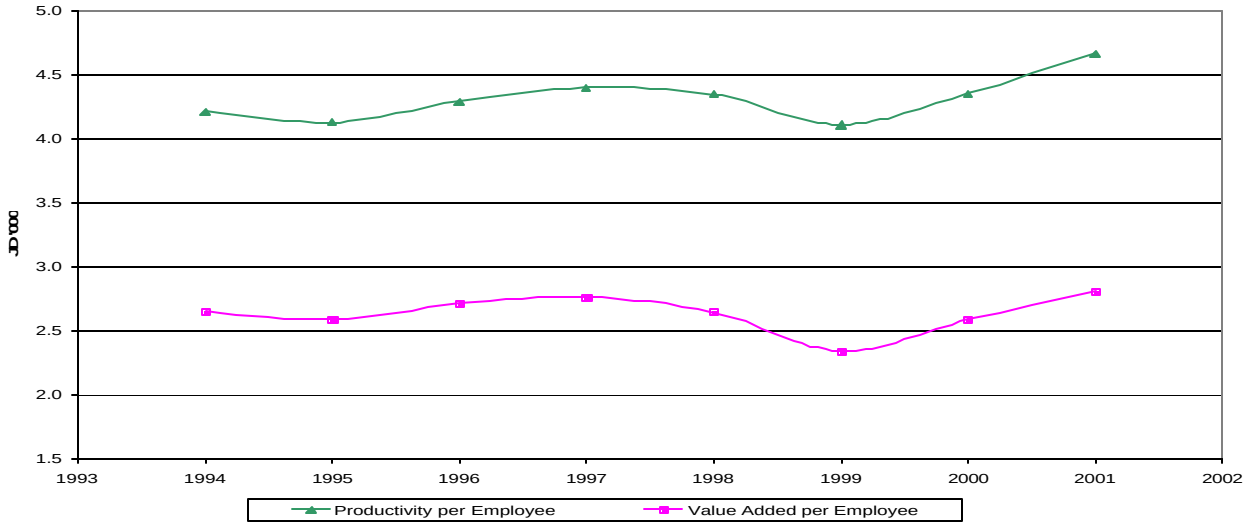


This sector needs governmental support in the recognition of qualifications in order to be able to export services to the developed world. Some of the opportunities in the European Countries (EU) countries are currently being identified by EJADA.

[17] Arkell, 2003.

6.11 Medical and Dental Practice Activities

Figure 21- Productivity: Medical and Dental Practice Activities

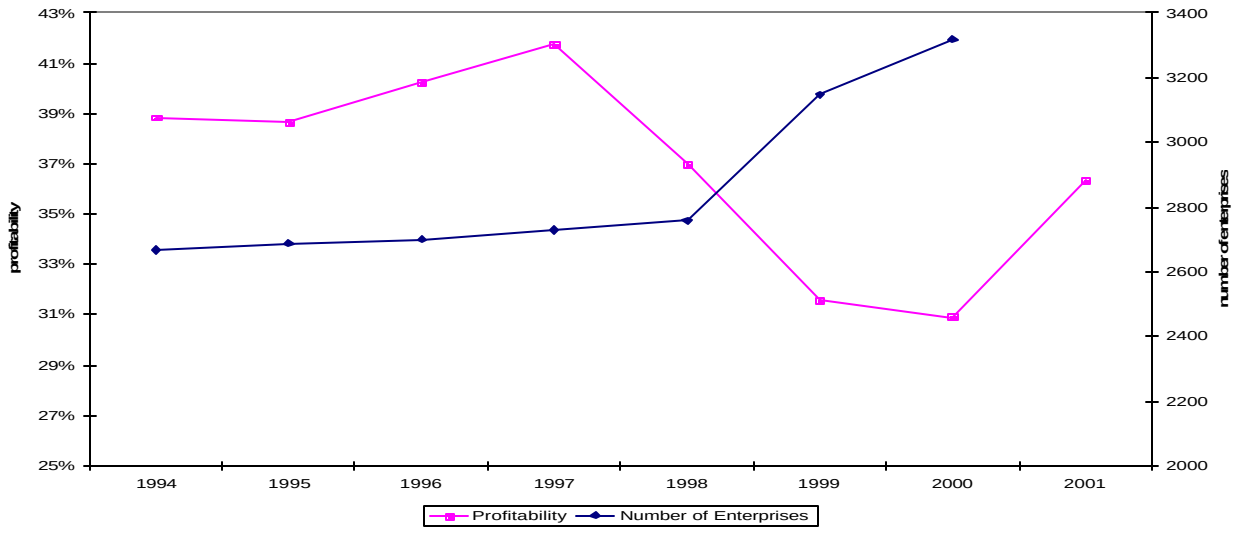


Medical and dental practice activities are the largest employer in the professional services sectors studied (5,742 employees in 2001).

- Productivity and value added per employee have exhibited minimal growth over the years.
- The number of enterprises increased moderately (2667 in 1994; 3317 in 2000), which resulted in a small decrease in profitability (39 percent in 1994; 31 percent in 2000).

Currently, this service has not been reviewed under the GATS schedule for Jordan; dentists are unbound and mode 4 has some restrictions under GATS (75 percent of doctors, 50 percent of all staff in hospitals and lab directors must be Jordanian- unless reciprocity for lab directors part).

Figure 22- Profitability: Medical and Dental Practice Activities



Exports of this service have huge potential, either in medical tourism coming into Jordan or Jordanian doctors working temporarily abroad (under modes 2 and 4). This is due to the competitive and highly educated Jordanian doctors and dentists.

(Mode 2) Medical tourism is extremely profitable when compared to traditional tourism; Jordan hosted between 27,000 and 32,000 patients annually in the four years ended 2001. Average expenditure per patient was around US$5,500 (as compared to US$520 per other tourist), yielding medical tourism revenues of US$165 million in 2001 (Andersen, 2001)[18]. A strategy to promote medical tourism in Jordan should be therefore jointly pursued with the Ministry of Health.

(Mode 4) As in architectural services, government support is needed in recognition of qualifications.

[18] The study argues that Jordan's medical sector has the capacity to increase foreign patient admission by 300 percent by 2005.

7. Recommendations

Jordan needs to build on its competency in supplying, to the domestic and international market, professionals who are well-educated, bilingual, highly skilled and low cost. One estimate indicates that there may be between 200,000-300,000 skilled and professional Jordanians working abroad (Arkell). These professionals (4% to 6% of the Jordanian population) contribute much-needed foreign currency remittances (about 22% and 23% of GDP for 2002 and 2001, respectively).

Jordan also needs to address the inefficiencies in transportation services. These inefficiencies, once addressed, have a huge effect on international competitiveness of most Jordanian exports.

The following summarizes the recommendations for the services studied above:

Task	Concerned Bodies	Beneficiaries
Increase resources at the Department of Statistics and Central Bank of Jordan to compile statistics on Jordanian exports and imports of services	DoS, CBJ	MIT, MoP, research institutions
Examine ways to increase productivity and value added in sea and maritime services	MoT, MIT, ASEZA	Export sector
Support MoT's initiative regarding use of Syrian and Lebanese ports for the European markets and their use of Aqaba for the East Asian markets	MIT, Ministry of Transport, ASEZA	Export sector
Support MoT's effort to attract private sector investment in the land port project	MIT, Ministry of Transport	Export sector
Address the complaints of old storage facilities in Aqaba	Ministry of Transport, ASEZA	Export sector
Support MoT's effort to liberalize land tariffs within the kingdom	MIT, MoP	Export sector
Address the delays in privatization of railway transport	MoP, Ministry of Transport	Export sector
Accelerate the mutual recognition of certification in medical tourism and architectural engineering services especially for the EU market	MIT, MoP, EJADA	Professional services; medical and architectural sectors
Promote medical tourism in Jordan	Ministry of Tourism, Jordan Tourism Board	Health sector

Appendix

Technical Notes

Productivity is the ratio of gross output to the number of employees. This was calculated using data from the Department of Statistics. Value added per employee was calculated analogously and captures the value added that each employee adds.

Profitability is the ratio of operational surplus to gross output. This ratio should be higher than the ongoing interest rate to reflect the risks inherent in doing business. If profitability is high enough, however, this may suggest collusion by the firms in the sector or price fixing by the government.

The Correlation Coefficient is "a number between -1 and 1 that measures the degree to which two variables are linearly related. If there is perfect linear relationship with positive slope between the two variables, we have a correlation coefficient of 1; if there is positive correlation, whenever one variable has a high (low) value, so does the other. If there is a perfect linear relationship with negative slope between the two variables, we have a correlation coefficient of -1; if there is negative correlation, whenever one variable has a high (low) value, the other has a low (high) value. A correlation coefficient of 0 means that there is no linear relationship between the variables" (from the Statistics Glossary, referenced below).

Note that the correlation coefficient above tests for a linear relationship. A non-linear relationship instead may exist between the variables; in that case the correlation coefficient would yield less meaningful results. For our purposes, a linear relationship between output and employment is a common assumption and implies constant returns to scale (CRS). Indeed, the correlation coefficient between output and employment was larger than 0.8 for most of the services studied. As for the number of enterprises and profitability, the linearity of this relationship is less intuitive and therefore the correlation coefficients have to be interpreted with care.

Figure A1- Gross Output

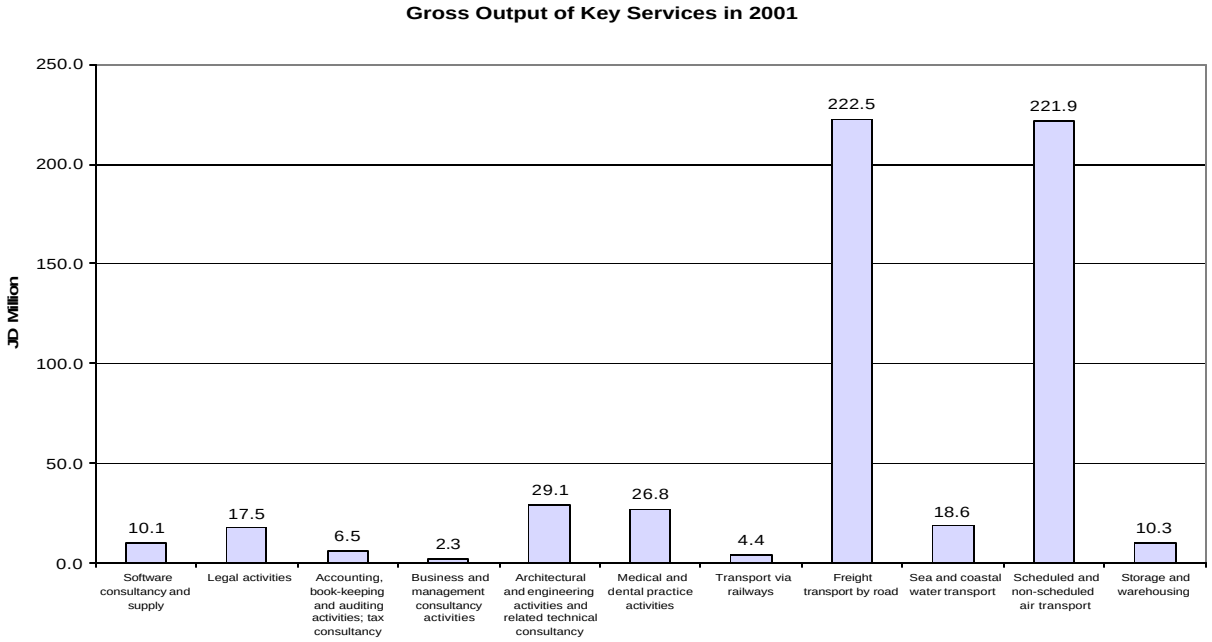


Figure A2- Employment

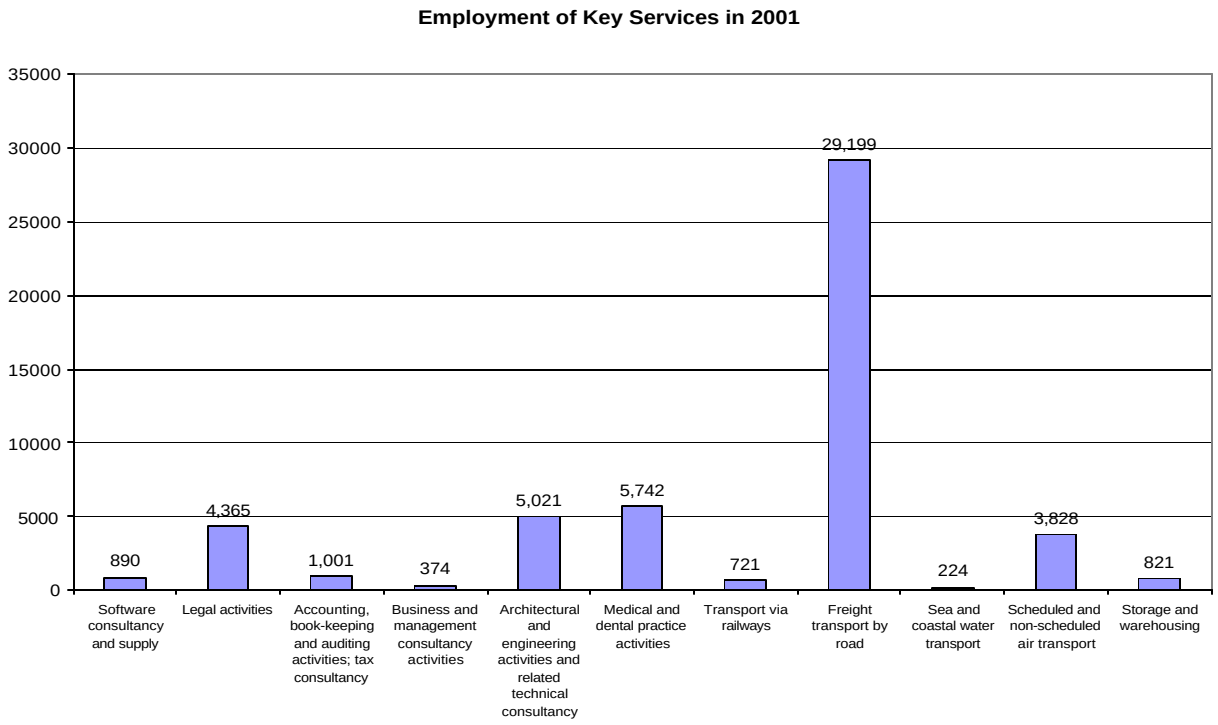


Table A1- Productivity Growth

The higher the annual growth, the higher the efficiency gains of the industry…

The annual productivity increase should ideally be higher than the inflation rate in order to maintain a real productivity increase. Assume a two percent annual inflation rate over the years studied[19]. We find:

1- Storage and warehousing had the highest real productivity growth.
2- Sea and coastal water transport had the lowest real productivity growth.

Service Sector	***Nominal Productivity Growth (%)***	***Real Productivity Growth (%)***
Software consultancy and supply	4.4	2.4
Legal activities	1.6	-0.4
Accounting, book-keeping and auditing activities; tax consultancy	3.5	1.5
Business and management consultancy activities	-1.6	-3.6
Architectural and eng. activities & related technical consultancy	4.7	2.7
Medical and dental practice activities	1.6	-0.4
Sea and coastal water transport	-8.9	**-10.9**
Scheduled and non-scheduled air transport	1.7	-0.3
Transport via railways	0.5	-1.5
Freight transport by road	3.6	1.6
Storage and warehousing	10.9	**8.9**

Table A2- Correlation Between Employment and Gross Output

The higher the correlation coefficient, the more efficient the recruitment process…

Below is the correlation between employment and output for the eight years 1994-2001. Note that it is larger than 0.8 for most of the services.

Economic Activity	**Correlation between Employment and Output**
Software consultancy and supply	0.98
Legal activities	0.97
Accounting, book-keeping and auditing activities; tax consultancy	0.96
Architectural and engineering activities and related technical consultancy	0.92
Freight transport by road	0.90
Medical and dental practice activities	0.82
Transport via railways	0.76
Business and management consultancy activities	0.73
Scheduled and non-scheduled air transport	0.67
Storage and warehousing	*0.41*
Sea and coastal water transport	*-0.35*

[19] This is slightly higher than the World Bank annual estimate of 1.56 percent a year.

Table A3- Correlation between Number of Enterprises and Profitability

The higher the number of enterprises, the lower the profitability…

In other words, increasing competition would lower the profitability and likely result in a negative correlation coefficient. Departures from this rule may suggest price fixing/cooperative arrangements or other anomalies.

Economic Activity	Correlation between Number of Enterprises and Profitability
Medical and dental practice activities	-0.93
Architectural and engineering activities and related technical consultancy	-0.90
Legal activities	-0.88
Accounting, book-keeping and auditing activities; tax consultancy	-0.62
Software consultancy and supply	-0.56
Sea and coastal water transport	-0.53
Storage and warehousing	-0.36
Freight transport by road	**0.53**
Business and management consultancy activities	**0.96**
Transport via railways*	-
Scheduled and non-scheduled air transport*	-

* The correlation for transport via railways scheduled and non-scheduled air transport cannot be calculated since the number of enterprises, for each service, was constant throughout.

Table A4- Extent of Services Protection

Service	Status in Schedule	Current Legal Status	Score*
Horizontal	(4) All professionals working in Jordan subject to services contract between juridical entities and ENT. (3) Managing Directors must be resident	Same	
Software consultancy and supply	None	None	1
Legal activities	Advice on foreign law only (1), (2), (3) None (4) Unbound – see horizontal	Restrictions on lawyers practicing local law	3
Accounting, book-keeping and auditing activities; tax consultancy	(1),(2) only by licensed resident auditor (3),(4) auditors must be Jordanian natural persons or partnerships. But temporary entry for auditors from reciprocal Members. None for accounting and taxation modes	Same but no restrictions on (1) auditing	2
Business and management consultancy activities	(1), (2), (3) None (4) Unbound – see horizontal	None	1
Architectural and engineering activities and related technical consultancy	(1),(2) None, but plans certified by local (3) 50 percent FEC. ½ equity held by engineers (4) Only Jordanian Nationals	(1),(2) None, but plans certified by local (3) 50 percent FEC. (4) Non-Jordanian need Cabinet approval	2
Medical and dental practice activities	Dentists Unbound (1), (2), (3) None (4) Unbound – see horizontal, and ¾ doctors, ½ all staff in hospitals, etc. and lab directors must be Jordanian (unless reciprocal agreement for lab directors). Doctors, Pharmacists must be Jordanian	Not reviewed	2
Transport via railways	Unbound	Subject to Hejaz Treaty (3) terminal services not subject to 50 percent FEC	3
Freight transport by road	Unbound	(1) Foreign vehicles may transport only outbound goods. (4) J. Firms must hire at least 3 Jordanian truck drivers	3
Sea and coastal water transport	(1) Liner shipping firms need local agent (3) 50 percent FEC for firms operating Jordanian owned ships (4) 1/5 crew on J. ships are Jordanian	(3) Ships owned by non-Jordanians not subject to 50 percent FEC	2
Scheduled and non-scheduled air transport	Unbound except airline agents (3) subject to 50 percent FEC	(3) 49 percent FEC	3
Storage and warehousing	(1), (2) None (3) public concession may apply (4) Unbound – see horizontal	(3) Port warehousing subject to Cabinet approval and Customs warehouses subject to 1 mil JD min capital. Vague ref to 50 percent FEC.	2

* 1 = fully liberalized, 2 = partly restricted, 3 = fully restricted

(Source: AMIR, Mimeo.)

Classification of Professional Services

The following details what is included under different professional services under the ISIC classification:

1- Software consultancy and supply (ISIC 7220) includes all software implementation services:
- systems and software consulting services
- systems analysis services
- systems design services
- programming services
- systems maintenance services

2- Legal services (ISIC 7411) includes:
- legal advisory and representation services in the different fields of law
- legal advisory and representation services in statutory procedures of quasi-judicial tribunals
- legal documentation and certification services
- other legal advisory and information services

3- Accounting, book-keeping, auditing activities and tax consultancy (ISIC 7412) includes:
- financial auditing services
- accounting review services
- compilation of financial statements services
- other accounting services
- book-keeping services
- business tax planning and preparation
- other services

4- Business and management consultancy services (ISIC 7414) includes:
- General management consulting services
- Financial management consulting services
- Marketing management consulting services
- Public relations services
- Other services

5- Architectural and engineering activities (ISIC 7421) includes:
- Architectural services
- Engineering services
- Integrated engineering services
- Urban planning and landscape architectural services
- Engineering related scientific and technical consulting services

6- Medical and dental practice activities (ISIC 8512) includes:
- General medical services
- Specialised medical services
- Dental services

*(*Source: Provisional Central Product Classification- UN Statistical Papers.*)*

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Meetings

The Secretary General of the Ministry of Transportation, H.E. Alaa Batayneh
PSPI Team: Greta Boye, Geoff Wright and Aref Al Farra. 9 June 2003.

Meetings with Maha Ali and Rafat Rawabdeh, WTO Directorate. MIT.

Meeting with Hana Uraidi, Euro-Jordanian Export Program. EJADA.